

Foundations & Pre-Calculus 10 Formula/Conversion Sheet

SI Units to Imperial Units Imperial Units to SI Units

$$1 \text{ mm} \doteq \frac{4}{100} \text{ in.}$$

$$1 \text{ in.} \doteq 2.5 \text{ cm}$$

$$1 \text{ cm} \doteq \frac{4}{10} \text{ in.}$$

$$1 \text{ ft.} \doteq 30 \text{ cm}$$

$$1 \text{ ft.} \doteq 0.3 \text{ m}$$

$$1 \text{ m} \doteq 39 \text{ in.}$$

$$1 \text{ yd.} \doteq 90 \text{ cm}$$

$$1 \text{ m} \doteq 3 \frac{1}{4} \text{ ft.}$$

$$1 \text{ yd.} \doteq 0.9 \text{ m}$$

$$1 \text{ km} \doteq \frac{6}{10} \text{ mi.}$$

$$1 \text{ mi.} \doteq 1.6 \text{ km}$$

Imperial Unit	Abbreviation	Referent	Relationship between Units
Inch	in.	Thumb length	
Foot	ft.	Foot length	1 ft. = 12 in.
Yard	yd.	Arm span	1 yd. = 3 ft. 1 yd. = 36 in.
Mile	mi.	Distance walked in 20 min	1 mi. = 1760 yd. 1 mi. = 5280 ft.

Metric Conversions: 1cm = 10mm; 1m = 100cm = 1000mm; 1km = 1000m

Pythagorean Theorem: $a^2 + b^2 = c^2$

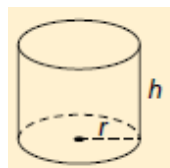
Area of Triangle = $\frac{bh}{2}$

Area of rectangle/square = $l \times w$

Area of Circle = πr^2

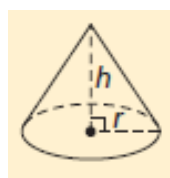
Circumference of a Circle = $2\pi r$ **OR** πd

Surface Area of a Cylinder = $2\pi r^2 + 2\pi rh$



Volume of a Cylinder = $\pi r^2 h$

Surface Area of a Cone = $\pi r s + \pi r^2$



Volume of a Cone = $\frac{1}{3} \pi r^2 h$

Surface Area of a Prism = sum of areas of all the faces

Volume of a Right Rectangular Prism = (base area)(height) = $l \times w \times h$

Surface Area of a Pyramid = area of base + area of triangular face

Volume of a *Right* Rectangular Pyramid = $\frac{1}{3}$ (base area)(height) = $\frac{1}{3}(l \times w \times h)$

Surface Area of a Sphere = $4\pi r^2$

Volume of a Sphere = $\frac{4}{3}\pi r^3$

Exponent Laws: $a^m \cdot a^n = a^{m+n}$ $\frac{a^m}{a^n} = a^{m-n}$ $(a^m)^n = a^{mn}$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m \qquad x^{-n} = \frac{1}{x^n}$$

2	3	4	5	6	7	8	9	10	11	12
$\sqrt{4}$	$\sqrt{9}$	$\sqrt{16}$	$\sqrt{25}$	$\sqrt{36}$	$\sqrt{49}$	$\sqrt{64}$	$\sqrt{81}$	$\sqrt{100}$	$\sqrt{121}$	$\sqrt{144}$
$\sqrt[3]{8}$	$\sqrt[3]{27}$	$\sqrt[3]{64}$	$\sqrt[3]{125}$	$\sqrt[3]{216}$	$\sqrt[3]{343}$	$\sqrt[3]{512}$	$\sqrt[3]{729}$	$\sqrt[3]{1000}$	$\sqrt[3]{1331}$	$\sqrt[3]{1728}$
$\sqrt[4]{16}$	$\sqrt[4]{81}$	$\sqrt[4]{256}$	$\sqrt[4]{625}$	$\sqrt[4]{1296}$	$\sqrt[4]{2401}$	$\sqrt[4]{4096}$	$\sqrt[4]{6561}$	$\sqrt[4]{10000}$	$\sqrt[4]{14641}$	$\sqrt[4]{20736}$
$\sqrt[5]{32}$	$\sqrt[5]{243}$	$\sqrt[5]{1024}$	$\sqrt[5]{3125}$	$\sqrt[5]{7776}$	$\sqrt[5]{16807}$	$\sqrt[5]{32768}$	$\sqrt[5]{59049}$	$\sqrt[5]{100000}$	$\sqrt[5]{161051}$	$\sqrt[5]{248832}$
$\sqrt[6]{64}$	$\sqrt[6]{729}$	$\sqrt[6]{4096}$	$\sqrt[6]{15625}$	$\sqrt[6]{46656}$						
$\sqrt[7]{128}$	$\sqrt[7]{2187}$	$\sqrt[7]{16384}$	$\sqrt[7]{78125}$							
$\sqrt[8]{256}$	$\sqrt[8]{6561}$	$\sqrt[8]{65536}$								

Trigonometric Ratios: **MAKE SURE YOUR CALCULATOR IS IN DEGREES MODE FIRST**

$$\sin A = \frac{\textit{opposite}}{\textit{hypotenuse}}$$

$$\cos A = \frac{\textit{adjacent}}{\textit{hypotenuse}}$$

$$\tan A = \frac{\textit{opposite}}{\textit{adjacent}}$$

$$\textbf{Slope} = \frac{\textit{rise}}{\textit{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\textbf{Rate of change} = \frac{\text{Change in dependent variable}}{\text{Change in independent variable}}$$

Slope-intercept form of the equation: $y = mx + b$

Slope-point form of the equation: $y - y_1 = m(x - x_1)$

General form of the equation: $Ax + By + C = 0$

Standard form of the equation: $Ax + By = C$